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(56) Documents Cited

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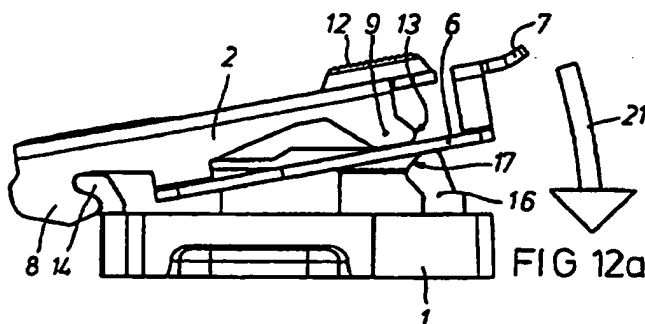
(58) Field of Search

UK CL (Edition P) E2F FAC FAD FCA
INT CL⁶ E05D 3/06 5/02 7/04 7/12 11/10

(54) Abstract Title

Detachable furniture hinge.

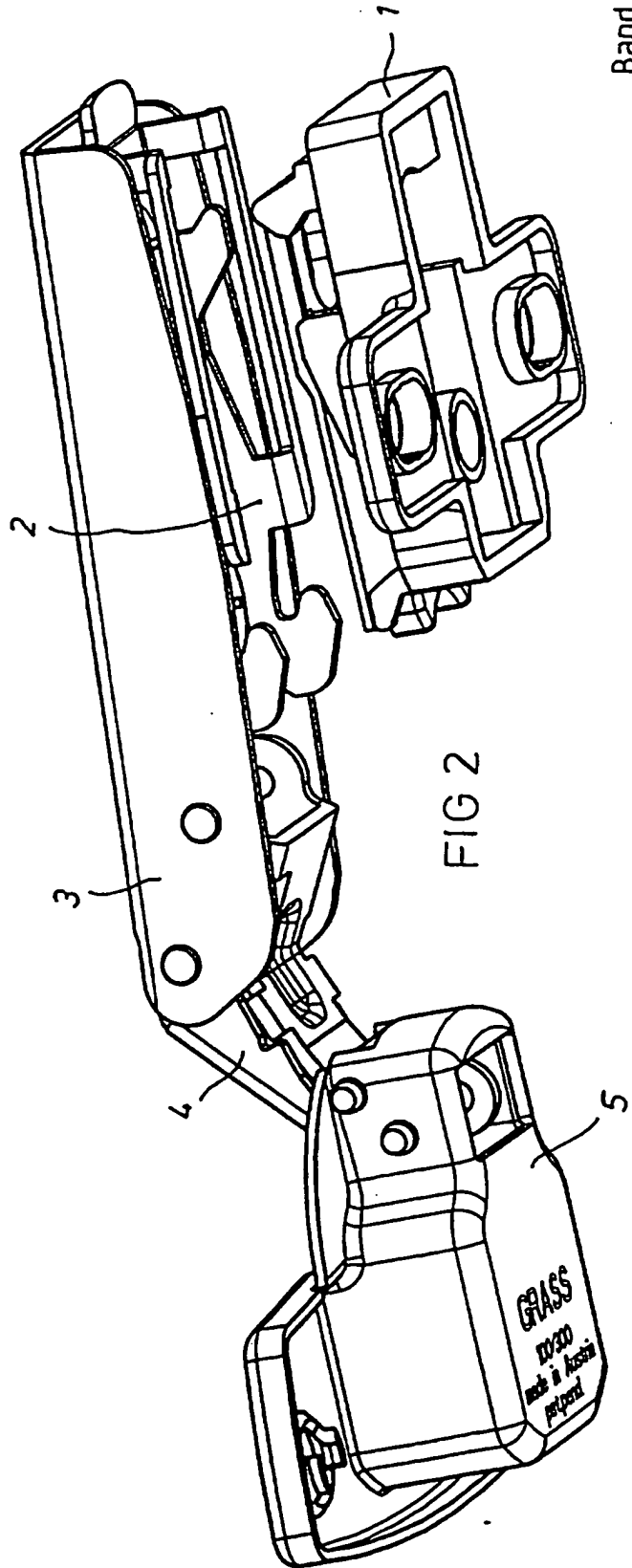
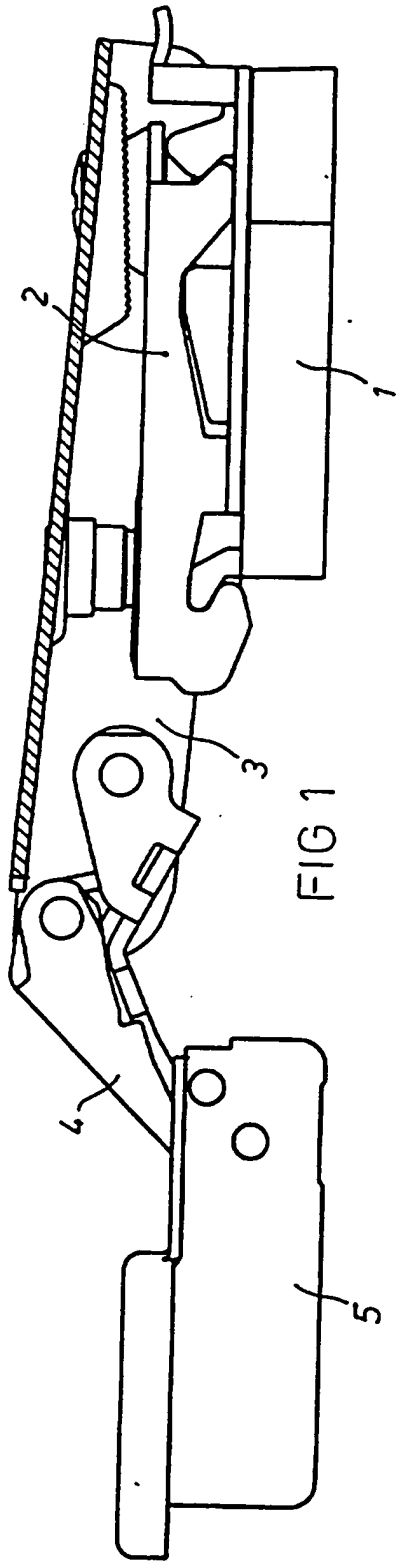
(57) A furniture hinge is connected via an actuating plate 2 to a base plate 1, fastened to the furniture body. Plate 2 is first hooked to plate 1 by means of hooked legs 8 engaging with protrusions 14. Next, movement of the upper plate 2 in direction 21 causes legs 9 to engage with surfaces 17 of noses 16. Finally, spring bracket 6 clips over abutting surface 19 (see Figure 12b) to secure the connection (Figure 12c). Plates 1 and 2 may be released from each other by moving grip 7 upward and releasing spring 6.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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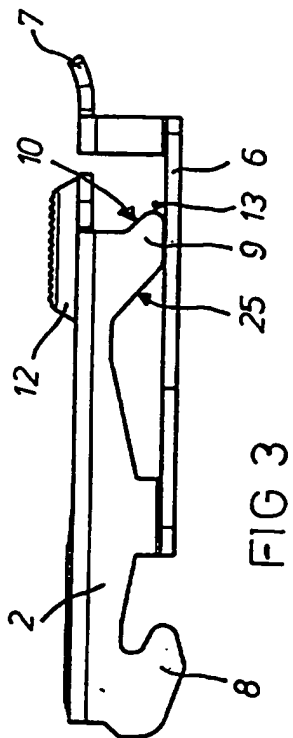


FIG 3

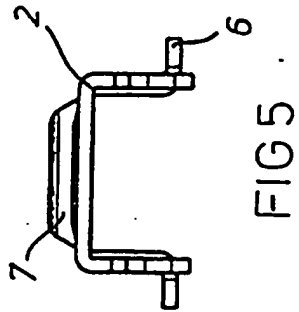


FIG 5

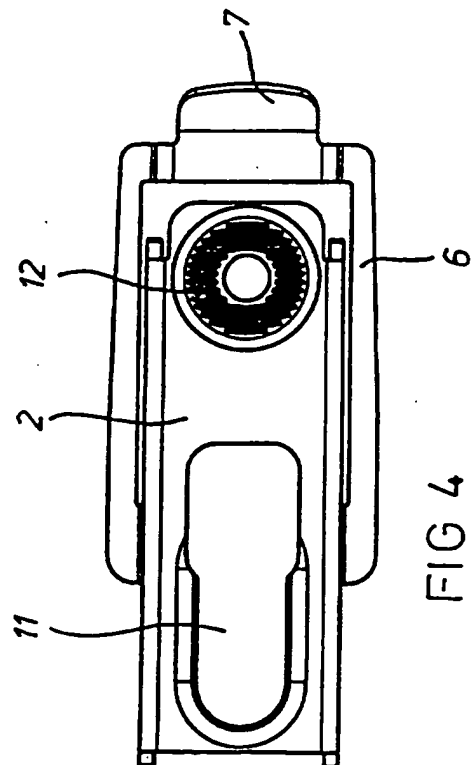


FIG 4

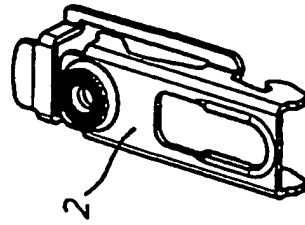


FIG 6 1:1

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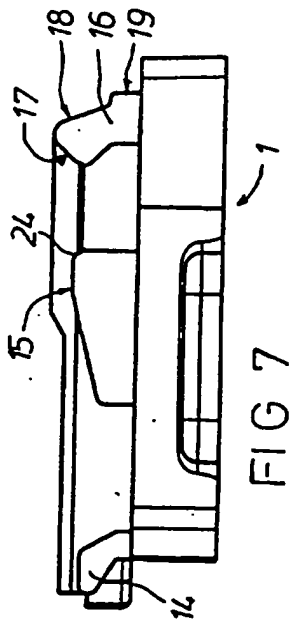


FIG 7

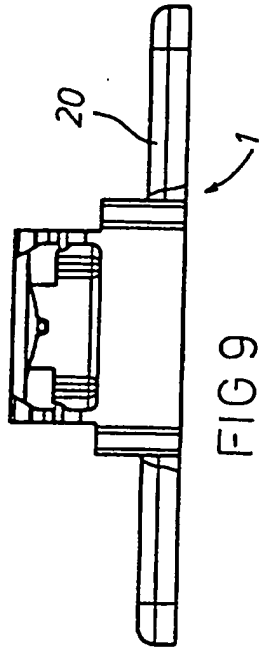


FIG 9

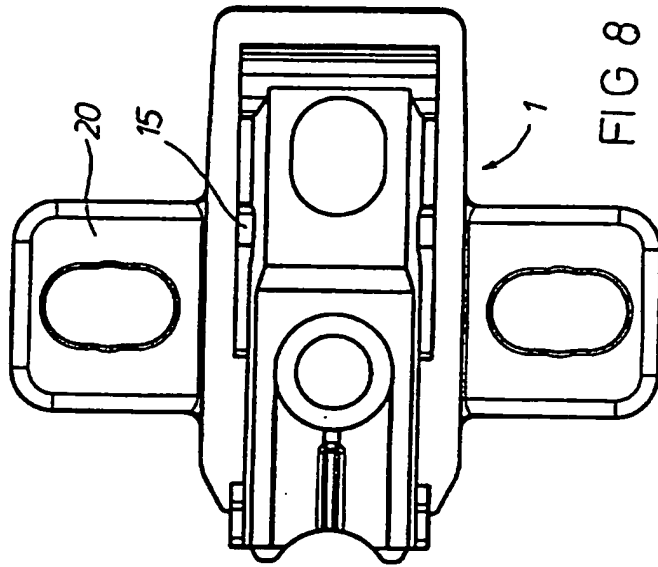
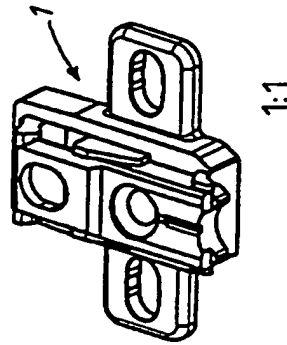


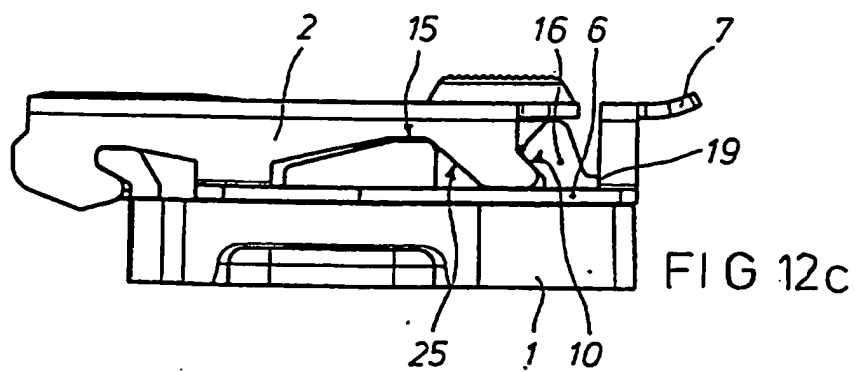
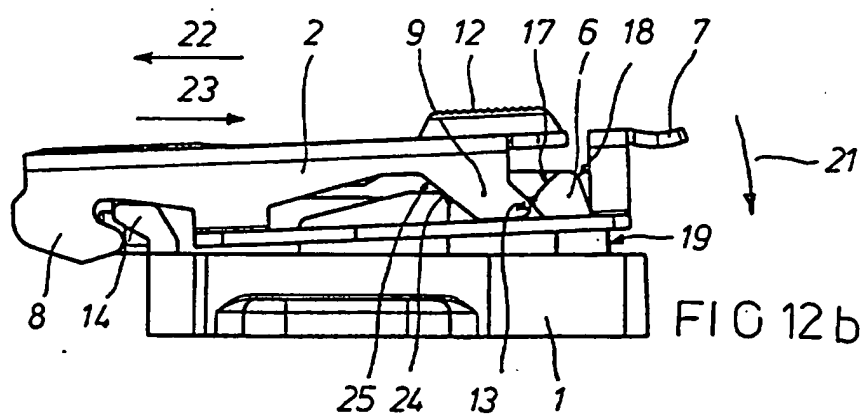
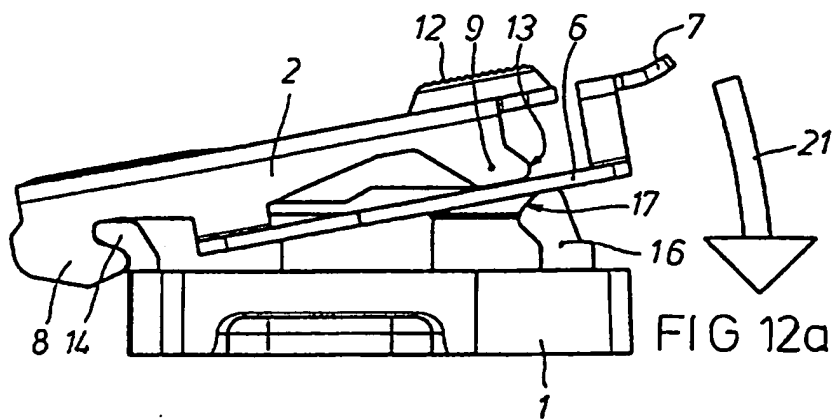
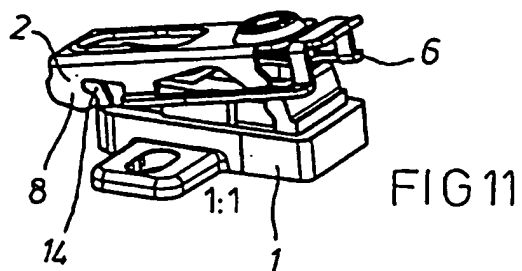
FIG 8



1:1

FIG 10

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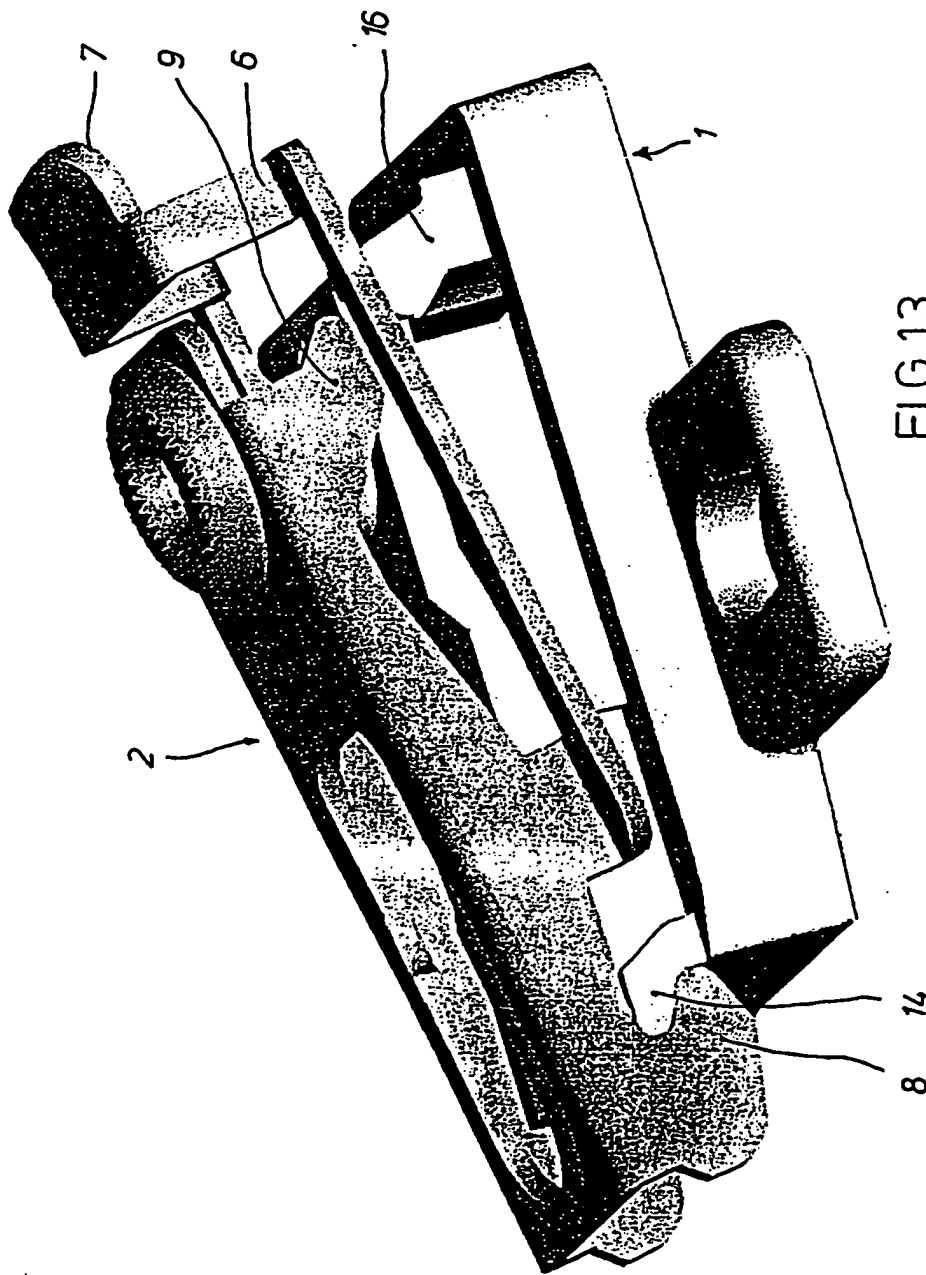


FIG 13

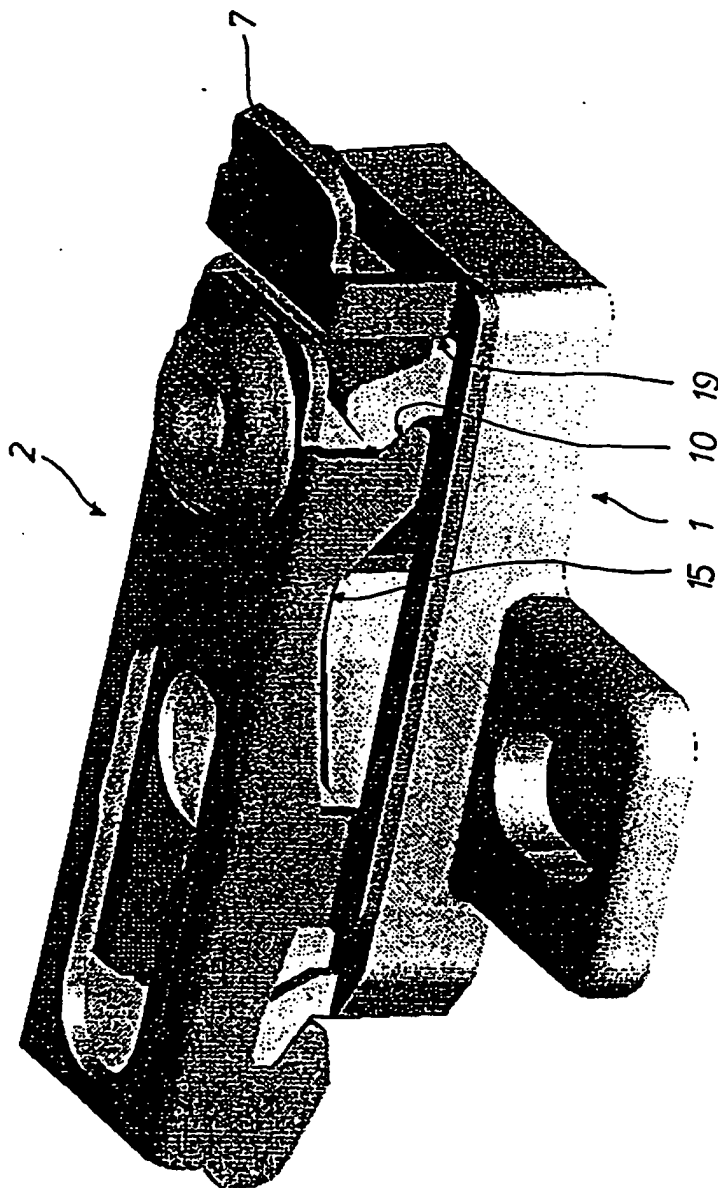


FIG 14

The invention relates to a furniture hinge according to the preamble of Claim 1.

5 DE 37 11 064 C2 discloses a furniture hinge having an actuating plate which is guided in a displaceable manner on a base plate. A leaf spring is fastened beneath the actuating plate. The hinge arm, with the actuating plate fastened in an adjustable
10 manner thereon, and the leaf spring are pushed onto the base plate until the leaf spring comes up against an associated stop and thus latches the actuating plate on the base plate.

A disadvantage here is that the hinges on a
15 door - there are at least two hinges - must simultaneously be pushed into the guides of the base plate and latched. This may be a laborious operation in some circumstances. In addition, the actuating plate and the leaf spring are separate parts, which results
20 in increased production costs.

German Utility Model 91 09 861 discloses a furniture connector, in particular for a hinge arm, having a first fitting part, which is to be fastened in the furniture door, with push-in openings and a second
25 fitting part, fastened on the hinge arm, with push-in legs which are oriented in a forward direction. Also provided is a separate spring element, which is fastened on the hinge and, when the legs are pushed into the push-in openings, latches in on the body of
30 the piece of furniture.

A disadvantage with this furniture connector is the long push-in path until latching takes place. The push-in legs project to a great extent, and, during installation, it is difficult to match them up with the
35 corresponding push-in openings.

An object of the invention is therefore to develop a furniture hinge of the type mentioned in the introduction such that straightforward installation of the hinge is made possible. It is also an object of the

invention to reduce the number of individual parts, and thus to minimise the production costs.

The object set is achieved by the characterizing features of Claim 1.

5 The invention is based on the fact that the latching operation between the actuating plate and base plate is initiated by pressure being exerted on the base plate, it preferably being the case that the actuating plate is designed as a partially resilient
10 part or carries a separate spring catch and has corresponding latching legs which, when pressure is exerted on the actuating plate, engage in associated latching noses of the base plate as a result of
15 suitable means forcing the actuating plate to be displaced relative to the base plate, the resilient part of the actuating plate securing the connection against further displacement.

 Further advantageous configurations and modifications of the invention constitute the subject
20 matter of the subclaims.

 The displacement of the actuating plate which is necessary for latching is produced with the aid of sloping sliding surfaces along which the actuating plate slides when pressure is exerted, with the result
25 that the latching legs of the actuating plate are brought into engagement with the latching noses of the base plate. It is of secondary importance here as to where the sloping sliding surfaces are arranged, be this on the actuating plate and/or the base plate, on
30 the latching legs and/or the latching noses or on other suitable surfaces of the actuating plate or base plate.

 The important factor is that the actuating plate comprises a resilient part which, on the one hand, provides the necessary counterforce during the
35 displacement of the actuating plate and, on the other hand, effects the latching action and secures the connection against further displacement. The spring may be arranged pivotably on the actuating plate, as a separate part, in the manner of a spring catch, or it

is also possible for the said spring to be designed integrally with the actuating plate.

The invention avoids the disadvantages of a long push-in path and difficult positioning in that the hinge parts can be fitted together without difficulty and a snap-on process allows the parts to be connected precisely and firmly.

The connection and automatic latching of the actuating plate to the base plate take place merely by using one's fingers to exert pressure. The latching connection can be released quickly by using one's fingers briefly to pull on the resilient element.

The subject matter of the present invention can be gathered not just from the subject matter of the individual patent claims, but also from the combination of the individual patent claims together. All the features and details disclosed in the documents, including the abstract, and, in particular, the three-dimensional design illustrated in the drawings, are claimed as being essential to the invention provided that they are novel, individually or in combination, in relation to the prior art.

The innovation is explained in more detail hereinbelow with reference to drawings which illustrate one way of realizing the invention. Further features which are essential to the invention as well as advantages of the innovation can be gathered from the drawings and the description thereof. In the drawings:

Figure 1 shows a longitudinal section through the hinge;
Figure 2 shows a perspective view of the hinge with the hinge arm released from the base plate;
Figure 3 shows an elevation of the actuating plate;
Figure 4 shows a plan view of the actuating plate;
Figure 5 shows a side view of the actuating plate;
Figure 6 shows a perspective illustration of the actuating plate;
Figure 7 shows an elevation of the base plate;
Figure 8 shows a plan view of the base plate;

- Figure 9 shows a side view of the base plate;
- Figure 10 shows a perspective illustration of the base plate;
- Figure 11 shows a perspective illustration of the non-latched-in state between the actuating plate and base plate;
- Figure 12a shows the base plate and actuating plate in the non-latched-in state;
- Figure 12b shows the base plate and actuating plate during the latching-in operation;
- Figure 12c shows the base plate and actuating plate in the latched state;
- Figure 13 shows a perspective view of the base plate and actuating plate in the non-latched-in state;
- Figure 14 shows a perspective view of the base plate and actuating plate in the latched-in state.

In the description below, use is made of the following indications of direction: forward(s), rearward(s), upward(s) and downward(s). Upward(s) and downward(s) correspond to the up and down directions in the drawing plane. Forward(s) and rearward(s) correspond to the left and right directions in the drawing plane.

As can be seen from Figures 1 and 2, the furniture hinge essentially comprises an articulation cup 5, which is positioned in the body of a piece of furniture. Via an articulation 4, the articulation cup 5 is connected to a hinge arm 3 which, in turn, is fastened on an actuating plate 2, which allows adjustment of the position of the hinge arm 3. The actuating plate 2 may be latched, according to the invention, on a base plate 1, which is to be fastened on a furniture door, in order thus for the latter to be connected to the body of the piece of furniture via the hinge.

Figure 2 shows a perspective illustration of the hinge, the actuating plate with the hinge arm 3 being released from the base plate 1.

Figures 3 to 6 illustrate a possible embodiment of the actuating plate 2. The actuating plate 2 comprises an elongate, single-piece part, preferably a metal part, which is bent essentially in the form of a U. A spring bracket 6 is formed integrally from the actuating plate, the legs of said spring bracket being positioned approximately in the central region of the longitudinal sides and continuing rearwards beyond the end of the actuating plate, where they are connected by a grip 7, which forms the rear end of the spring bracket 6, in order for it to be possible to actuate the spring bracket 6 by hand.

Formed in the rear region of the actuating plate 2, in the vicinity of the grip 7, are legs 9 which are directed more or less to slope rearwards. The top sloping side of the leg 9 forms an abutment surface 10 which terminates with a rounded edge 13. Provided on the underside of the leg 9 is a sloping sliding surface 25 which runs approximately parallel to the abutment surface 10.

Formed at the opposite end from the side walls of the actuating plate are further, hook-shaped legs 8, by means of which the actuating plate 2 can be hooked in on the base plate 1, as is explained hereinbelow.

The actuating plate also has a slot 11 and a bore which is designed as a bearing surface 12 and is intended for the adjustable fastening of the hinge arm 3.

Figures 7 to 10 show a possible embodiment of the base plate 1. The base plate 1 is fastened on a furniture door directly or by means of fastening flanges 20. It is designed as an approximately rectangular part and, to the front end, has protrusions 14 on which the hook-shaped legs 8 of the actuating plate 2 can engage. Provided at the opposite end are latching noses 16 which are oriented more or less to slope upwards/forwards. In the latched-in state, the legs 9 of the actuating plate 2 engage beneath these latching noses. The latching noses 16 have two top,

sloping sliding surfaces 17,18 and an approximately vertical, bottom abutment surface 19. A further horizontal abutment surface 15 is provided approximately in the central region of the base plate 1 and terminates at a rounded edge 24 on one side.

Figure 11 shows a perspective illustration of the first step for connecting the actuating plate 2 to the base plate 1. The hook-shaped legs 8 of the actuating plate 2 are hooked in on the protrusions 14 of the base plate 1 by the actuating plate 2 being pushed on the base plate.

Figures 12a to 12c, then, show the details of the rest of the latching-in operation.

The actuating plate already has its legs 8 hooked in on the base plate 1. Manual pressure from above on the bearing surface 12 of the actuating plate (but not on the grip of the spring bracket) causes said actuating plate to be pressed downwards in direction 21 (Figure 12a). In this case, the rounded edge 13 of the leg 9 of the actuating plate slides forwards/downwards on the sloping surface 17 of the latching nose 16 on the base plate and, as a result of the sliding movement along a slope, the actuating plate 2 is displaced forwards a little in direction 22 (Figure 12b). The spring bracket 6 butts against the top region of the surface 18 of the latching nose 16 and, on account of its resilient property, remains there during the downward/forward movement of the rest of the actuating plate 2. Once the edge 13 has reached the bottom end of the sliding surface 17, then the sliding movement of the actuating plate 2 is reversed. The spring bracket 6 thus produces a certain counterpressure on the actuating plate until the latter has overcome the bottom edge of the first sliding surface 17 and reverses its movement direction.

This takes place in that the sloping, bottom sliding surface 25 of the actuating plate 2 then comes to rest on the rounded edge 24 of the base plate 1 and slides along the same, with the result that the

actuating plate 2 undergoes a horizontal movement in the opposite, rearward direction 23. In this process, the leg 9 of the actuating plate 2 is displaced beneath the latching nose 16 of the base plate 1 and positions itself, by way of its abutment surface 10, against the associated bottom surface of the latching nose 16 (Figure 12c). At the same time, the spring bracket slides downwards along the sloping sliding surface 18 of the latching nose 16 and, finally, positions itself against the vertical abutment surface 19 of the latching nose 16.

The actuating plate and base plate are now latched to one another.

Figures 13 and 14 are perspective illustrations of the actuating plate and the base plate in the non-latched state and in the latched state. The interaction, and the positioning, of the parts which are necessary for the latching operation can be seen clearly.

It is important that the spring bracket 6 only secures the actuating plate 2 against horizontal displacement in the forwards direction, but otherwise it must not absorb any lifting forces.


The actuating plate 2 is secured against lifting as a result of the actuating plate hooking in on the base plate and of the legs 9 engaging beneath the latching noses 16 of the base plate 1. As long as manual pressure does not release the spring bracket in the lifting direction (upwards) from its seat, it is not possible for the actuating plate to be released from its seat either.

It is also important, during the latching-in operation, for the actuating plate to undergo a kind of forced zig-zag movement downwards/forwards and downwards/rearwards on the base plate, in order that the legs 9 can engage beneath the latching noses 16 of the base plate. This zig-zag movement is initiated by the actuating plate being subjected to pressure from above and is forced by suitable sloping sliding

- 8 -

surfaces, which may be arranged either on the actuating plate and/or on the base plate.

Key to the Drawings



	1	Base plate
	2	Actuating plate
5	3	Hinge arm
	4	Articulation
	5	Articulation cup
	6	Spring bracket
	7	Grip
10	8	Leg
	9	Leg
	10	Abutment surface
	11	Slot
	12	Bearing surface
15	13	Edge
	14	Protrusion
	15	Abutment surface
	16	Latching nose
	17	Sliding surface
20	18	Sliding surface
	19	Abutment surface
	20	Fastening flange
	21	Direction (vertical)
	22	Direction (forwards)
25	23	Direction (rearwards)
	24	Edge
	25	Sliding surface

Claims

1. Furniture hinge having a hinge arm or hinge band fastened on an articulation cup, it being the case
5 that the hinge arm can be connected in an adjustable manner, via an actuating plate, to a base plate which is fastened on the body of a piece of furniture, and a latching connection is provided for securing the connection, characterized in that the actuating plate
10 (2) can be fitted on the base plate (1) by means of hook-shaped legs (8), and has legs (9) which, when pressure is exerted on the actuating plate (2), engage in associated latching noses (16) of the base plate (1) as a result of suitable means forcing the actuating
15 plate (2) to be displaced relative to the base plate, a spring (6) which is arranged on the actuating plate (2) securing the connection against further displacement.

2. Furniture hinge according to Claim 1, characterized in that rearwardly directed hook-shaped
20 legs (8) are formed from the vertical side walls on either side of the actuating plate (2) and can be fitted on associated protrusions (14) of the base plate (1).

3. Furniture hinge according to either of Claims 1
25 or 2, characterized in that the legs (9) have a top, sloping abutment surface (10), these surfaces terminating with a rounded edge (13).

4. Furniture hinge according to one of Claims 1 to
30 3, characterized in that the legs (9) have a bottom, sloping sliding surface (25) which runs approximately parallel to the top abutment surface (10).

5. Furniture hinge according to one of Claims 1 to
35 4, characterized in that the latching noses (16) of the base plate (1) have a top, sloping sliding surface (17) which merges into an abutment surface running in the opposite direction.

6. Furniture hinge according to one of Claims 1 to
5, characterized in that the base plate has a top, horizontal abutment surface (15) for the actuating

plate (2), said abutment surface (15) terminating with a rounded edge (24) on one side.

7. Furniture hinge according to one of Claims 1 to 6, characterized in that the resilient part is formed integrally, as a spring bracket (6), from the actuating plate (2) such that it projects rearwards as a resilient, frame-like surround of the actuating plate (2).

8. Furniture hinge according to one of Claims 1 to 7, characterized in that, during the latching-in operation, a first sloping sliding surface (17) moves the actuating plate in the forwards direction (22), and in that a second slope (25) then moves the actuating plate (2) in the opposite, rearwards direction (23) until the sloping surfaces (10) of the actuating plate position themselves against the associated sloping surfaces of the base plate (1), the spring bracket (6) sliding over the latching nose (16), along the sliding surface (18), and effecting the latching action.

9. Furniture hinge according to one of Claims 1 to 8, characterized in that the connection is unlocked by using one's fingers to exert pressure on the spring bracket (6) in the lifting direction.

10. Furniture hinge according to one of Claims 1 to 9, characterized in that, for longitudinal guidance on the base plate (1), the actuating plate (2) is of approximately U-shaped design in cross-section.



Application No: GB 9803879.7
Claims searched: 1-10

Examiner: Matthew Males
Date of search: 26 May 1998

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): E2F (FAC, FAD, FCA)

Int Cl (Ed.6): E05D 3/06, 5/02, 7/04, 7/12, 11/10

Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2,232,716 A Industria Tecnica De La Bisagra S.A. (see Figures, especially hooked portion 5, and spring-latching mechanism in Figs 5 & 6).	1 & 2
A	EP 0,799,959 A2 Danco S.p.A. (see Figures).	-
A	US 5,159,740 Klaus Brustle et al (see Figure 1).	-
X	US 4,888,853 Erich Rock et al (whole document, but see "hook shaped legs" 67, Fig 24, and spring-loaded member 57 & notches 54, Fig 19).	1 & 2 at least

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

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